

Western Digital Technologies, Inc.
Serial Number: 09/676,405



Patent
Docket: K35A0458

In re Application of: Butler
Serial No.: 09/676,405
Filed: 09/29/00
Title: A DISK DRIVE COMPRISING A COVER
SHAPED TO IMPROVE RADIAL AND
AXIAL SHROUDING

Group Art Unit: 2651
Examiner: Castro, A. A.

RECEIVED
NOV 10 2004
Technology Center 2600

DECLARATION UNDER 37 CFR 1.131

THE COMMISSIONER FOR PATENTS
ALEXANDRIA, VA 22313

1. I, Walter W. Butler, am the applicant in the above-identified patent application and, from January 1993 to date, have been employed by Western Digital to whom said application is assigned.

2. Long prior to October 12, 1999, I completed the invention described and claimed in the above-identified patent application in the United States by actually reducing the invention to practice at the San Jose, California facility of my employer Western Digital.

3. Long prior to October 12, 1999, I prepared engineering drawings describing the invention, copies of which are attached as Exhibit A. The engineering drawings show the elements of the disk drive cover disclosed and claimed in the above-identified patent application.

4. Long prior to October 12, 1999, I emailed the engineering drawings shown in Exhibit A to Moulding Industries located in Singapore with the intent of having Moulding Industries manufacture a prototype of the disk drive cover. The engineering drawings were presented to Jim Boeckner, an employee of Moulding Industries who was involved in the actual manufacture of the prototype of the disk drive cover. The

prototype of the disk drive cover was completed long prior to October 12, 1999, and a photograph of the actual prototype is attached as Exhibit B.

5. Long prior to October 12, 1999, I tested the prototype of the disk drive cover on a conventional disk drive manufactured by Western Digital shown in Exhibit B and my test results confirmed the beneficial aspects of the shrouding elements integrated into the disk drive cover. My test results are attached as Exhibit C.

6. The dates have been removed from the copies of the documents in the attached Exhibits, but are visible on the originals.

7. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

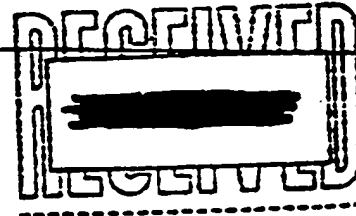


Walter W. Butler

27- Oct -04

Date

Walter W Butler, 01:41 PM [REDACTED], Proposed 3.5" WD Cover



Return-Path: <walter.w.butler@wdc.com>
From: Walter W Butler <walter.w.butler@wdc.com>
To: "'tooling@cyberway.com.sg'" <tooling@cyberway.com.sg>
Subject: Proposed 3.5" WD Cover
Date: [REDACTED] 13:41:30 -0700

Hello Ong Teck Kuen,

My name is Walt Butler with WDSJ, and have been trying to send a 3D solid design file to David Chua for about 3 days.

We are looking at the possibility of using a insert molded laminate cover on 3.5" drives (high volume). The first possibility would be on Flagstaff (next summer in volume), and definately on Alpine (following winter for volume). The attached file is in VDS solid designer. This is a first pass design, and what we are looking for is vendor feedback. What can be done to help out with manufacturability.

The cover is composed of laminate stamping (either .027" or .030" thick), and 10% glass filled polycarbonate or ABS, and for the spindle motor attachment a 3M whirl damper.

As for the stamper either Oaktech or Seksun would be a good choice. Edmun Mok of Oaktech was here this week, and has been informed of this new project. If possible, lets try for a phone conference on your Tuesday morning @ 9:00am; let's have you please call me at (408) 363-5504

Best Regards,

Walt

Attachment Converted: "C:\EUDORA\ATTACH\cov_wwc.pkg"



Chris - FI
David Chua
Serena Wang
Tc Woo
Johnny Heng
Robin Wan
Chia Ming Ghee

MI

FROM: JIM BOECKNER



EXHIBIT A

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PREPARED

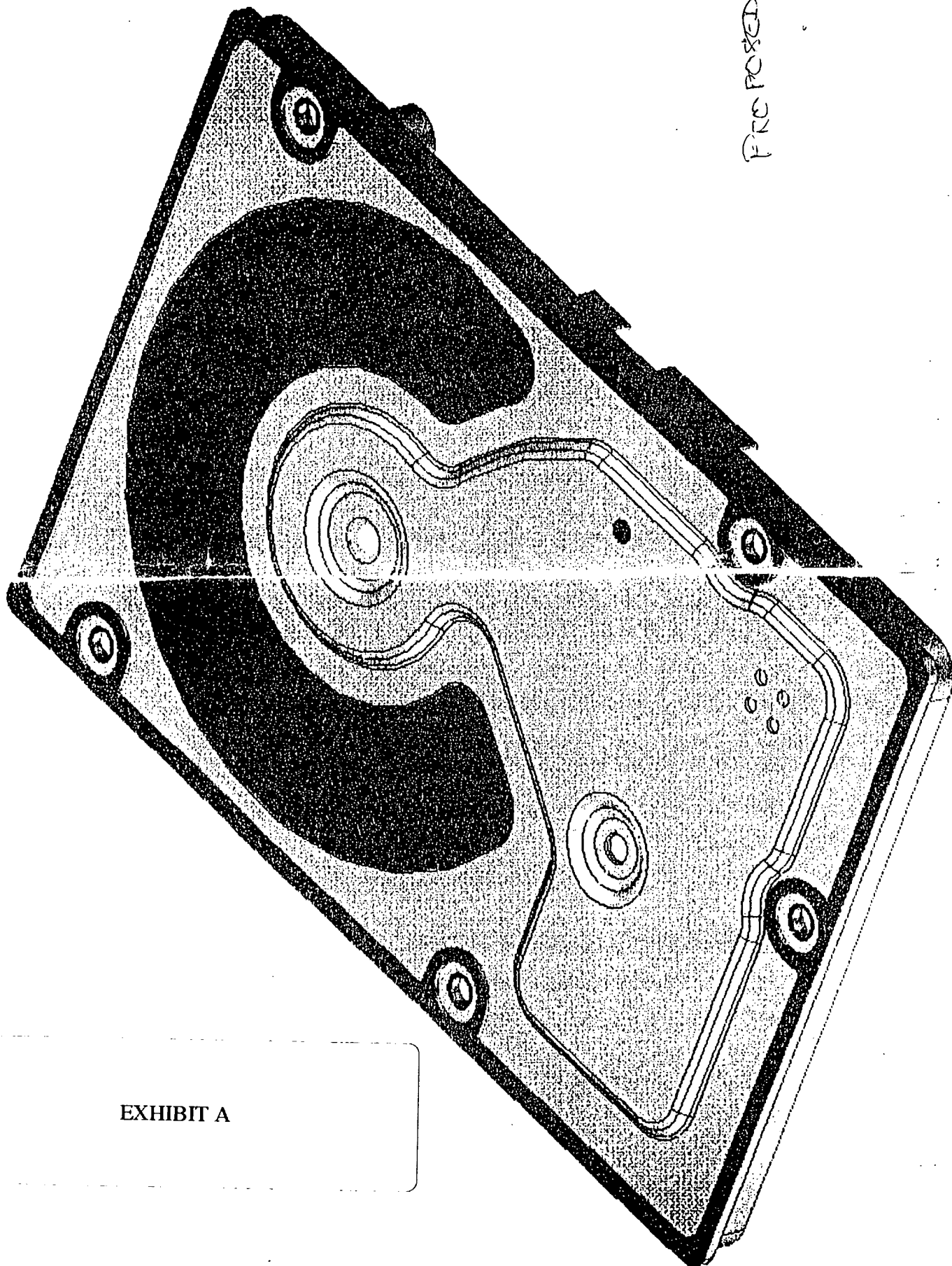


EXHIBIT A

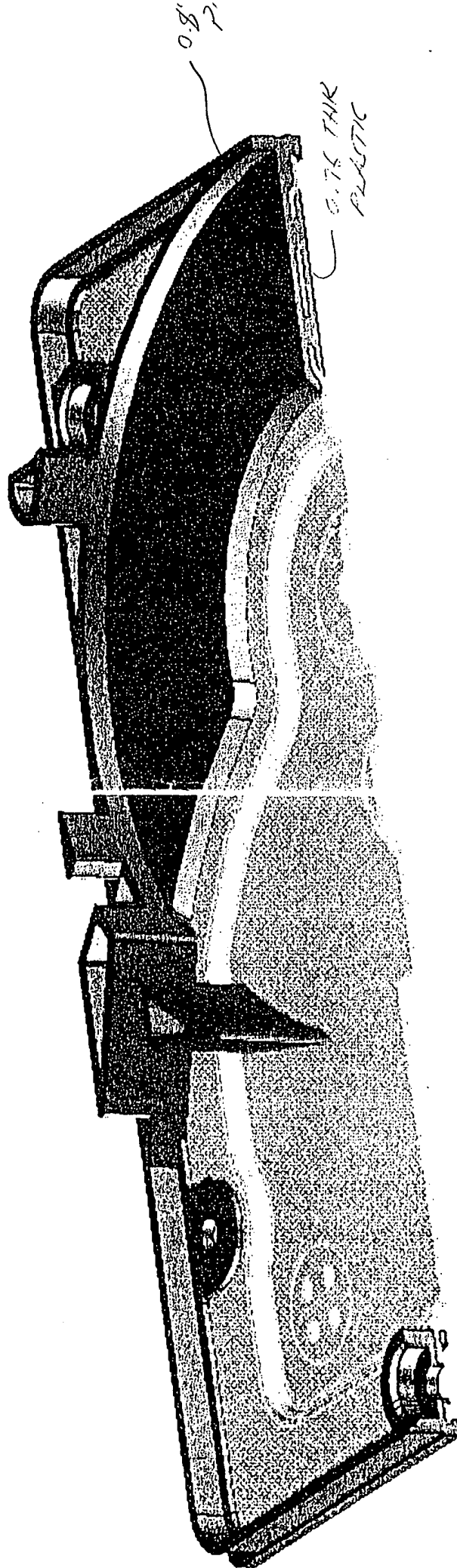


EXHIBIT A

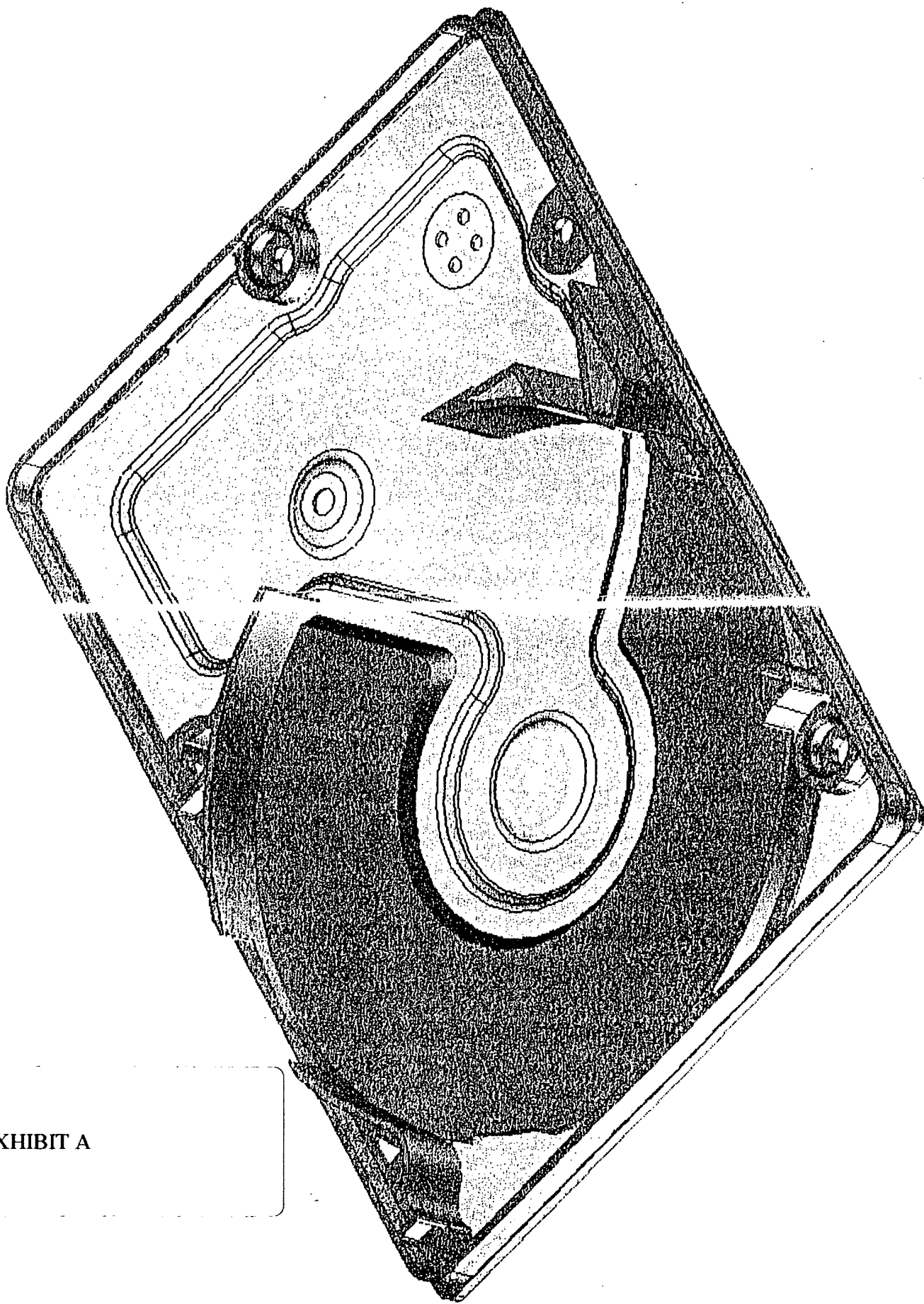


EXHIBIT A

EXHIBIT A

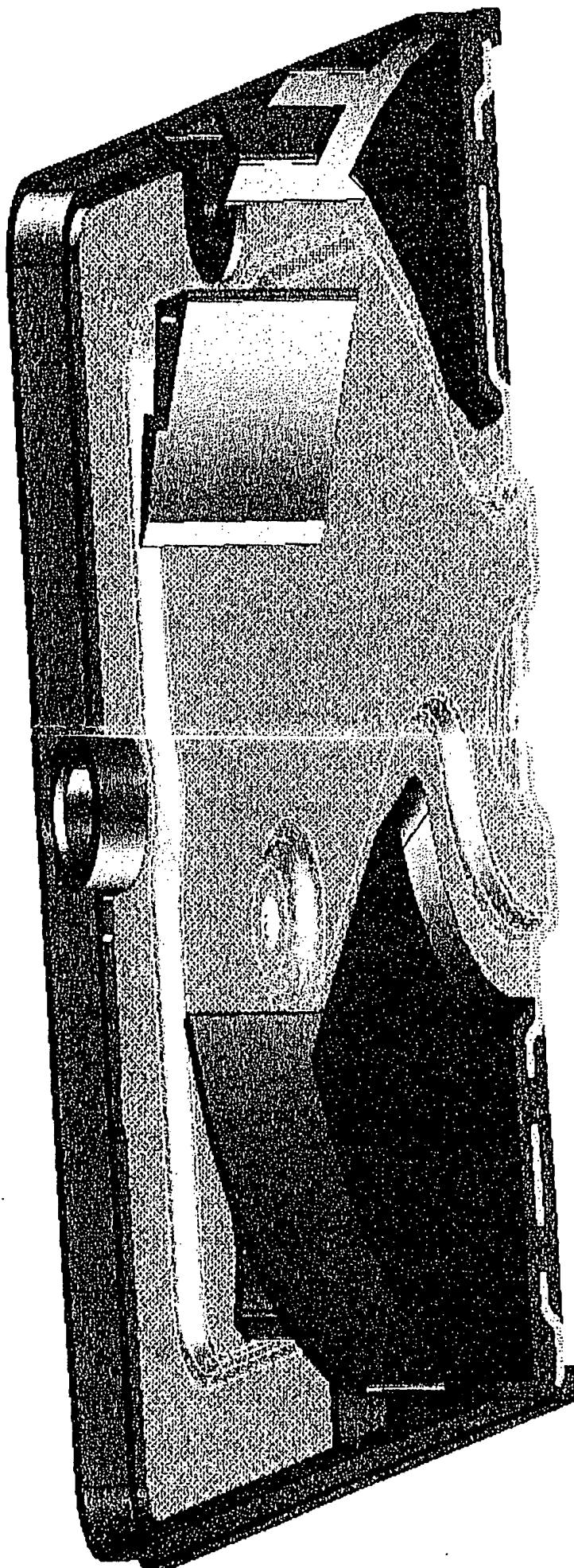
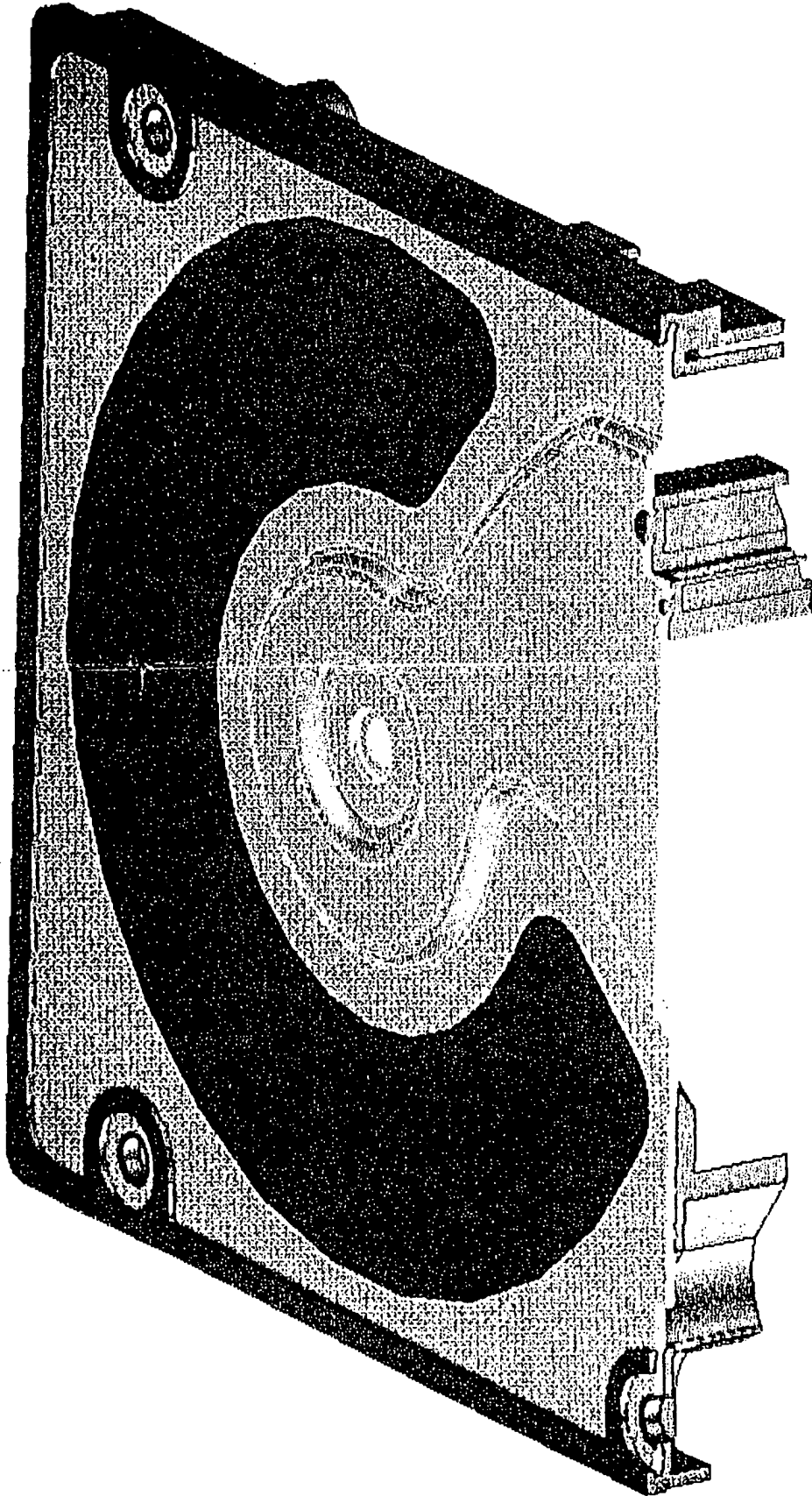
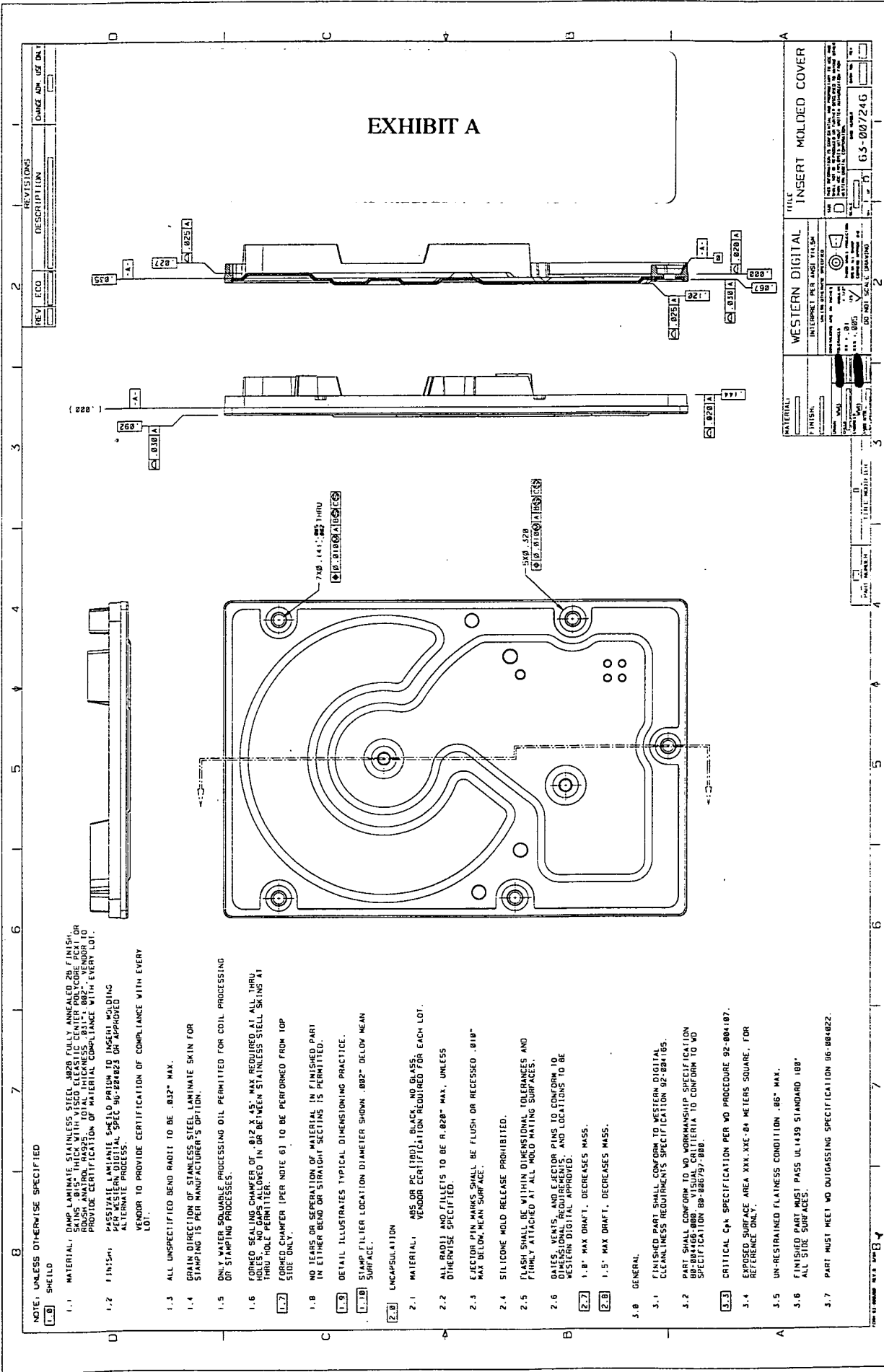


EXHIBIT A



CON 1



NOTE, UNLESS OTHERWISE SPECIFIED

- 1.1 MATERIAL: DMP LAMINATE STEEL .028 FULLY ANNEALED 2B FINISH, SKINS .015" THICK WITH VISCO ELASTIC CENTER POLYURETHANE CORE. PROVIDE CERTIFICATION OF MATERIAL COMPLIANCE WITH EVERY LOT.
- 1.2 FINISH: PASSIVATE ANTI-SCALE PRIMER TO US MIL STD 1312 PER WESTERN DIGITAL SPEC 92-004187 OR APPROVED ALTERNATE PROCESS. VENDOR TO PROVIDE CERTIFICATION OF COMPLIANCE WITH EVERY LOT.
- 1.3 ALL UNSPECIFIED BEND RADIUS TO BE .032" MAX.
- 1.4 GRAIN DIRECTION OF STAINLESS STEEL LAMINATE SKIN FOR STAMPING IS PER MANUFACTURER'S OPTION.
- 1.5 ONLY WATER SOLUBLE PROCESSING OIL PERMITTED FOR COIL PROCESSING OR STAMPING PROCESSES.
- 1.6 FORMED SEALING CHAMFER OF .012 X .45" MAX REQUIRED AT ALL THRU HOLES AND CHAMFER FOLLOWED IN OR BETWEEN STAINLESS STEEL SKINS AT FORMED HOLES PER MIL-STD-1312.
- 1.7 FORMED CHAMFER (PER NOTE 6) TO BE PERFORMED FROM TOP SIDE ONLY.
- 1.8 NO TEARS OR SEPARATION OF MATERIAL IN FINISHED PART IN EITHER BEND OR STRAIGHT SECTIONS IS PERMITTED.
- 1.9 DETAIL ILLUSTRATES TYPICAL DIMENSIONING PRACTICE.
- 1.10 STAMP TOLERANCE LOCATION DIAMETER SHOWN .002" BELOW MEAN SURFACE.
- 2.0 ENCAPSULATION
- 2.1 MATERIAL: ABS OR PC (TPO), BLACK, NO GLASS. VENDOR CERTIFICATION REQUIRED FOR EACH LOT.
- 2.2 ALL RADIUS AND FILLETS TO BE R.028" MAX, UNLESS OTHERWISE SPECIFIED.
- 2.3 EJECTOR PIN MARKS SHALL BE FLUSH OR RECESSED .010" MAX BELOW MEAN SURFACE.
- 2.4 SILICONE MOLD RELEASE PROHIBITED.
- 2.5 FLASH SHALL BE WITHIN DIMENSIONAL TOLERANCES AND FINISH ATTACHED AT ALL MOLD MATING SURFACES.
- 2.6 GATES, VENTS, AND EJECTOR PINS TO CONFORM TO DIMENSIONAL REQUIREMENTS, AND LOCATIONS TO BE WESTERN DIGITAL APPROVED.
- 2.7 1.8" MAX DRAFT, DECREASES MASS.
- 2.8 1.5" MAX DRAFT, DECREASES MASS.
- 3.0 GENERAL
- 3.1 FINISHED PART SHALL CONFORM TO WESTERN DIGITAL CLEANLINESS REQUIREMENTS SPECIFICATION 92-004185.
- 3.2 PART SHALL CONFORM TO WORKMANSHIP SPECIFICATION 92-004186 VISUAL CRITERIA TO CONFORM TO US SPECIFICATION 92-004187.
- 3.3 CRITICAL Cpk SPECIFICATION PER US PROCEDURE 92-004187.
- 3.4 EXPOSED SURFACE AREA XXX.XXX-84 METERS SQUARE, FOR REFERENCE ONLY.
- 3.5 UN-RESTRAINED FLATNESS CONDITION .06" MAX.
- 3.6 FINISHED PART MUST PASS UL439 STANDARD 100" ALL SIDE SURFACES.
- 3.7 PART MUST MEET NO OUTGASSING SPECIFICATION 92-004188.

REVISIONS		DATE		BY	
REV	ECO	DESCRIPTION	DATE	BY	ECO
1					
2					

WESTERN DIGITAL		MIL INSERT MOLDED COVER	
INTERPRET PER PAGE 111534		63-007246	
MATERIAL		FINISH	
PART NAME		DO NOT SCALE DRAWING	
DATE		BY	
CHECKED		APPROVED	

[illegible]

3.13 ALL DIMENSIONS AND TOLERANCES APPLY WHEN PART 15 IS IN CONSTRAINED CONDITION BY DATUMS -A-, -B-, & -C- AS DESCRIBED IN NOTE 3.10.

EXHIBIT B

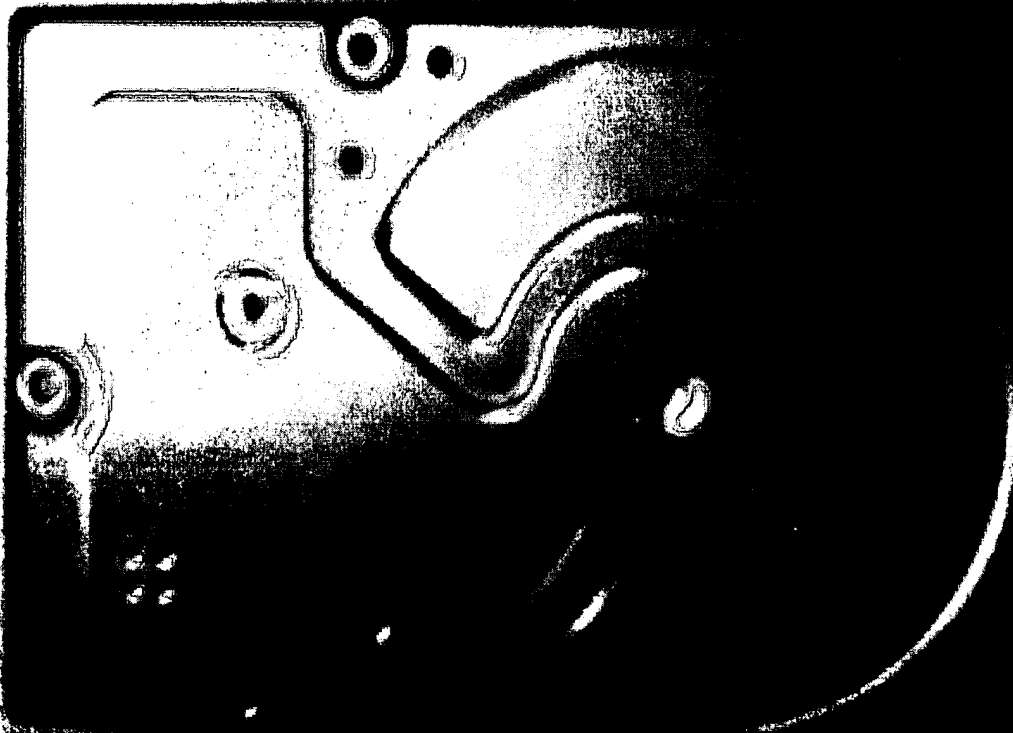
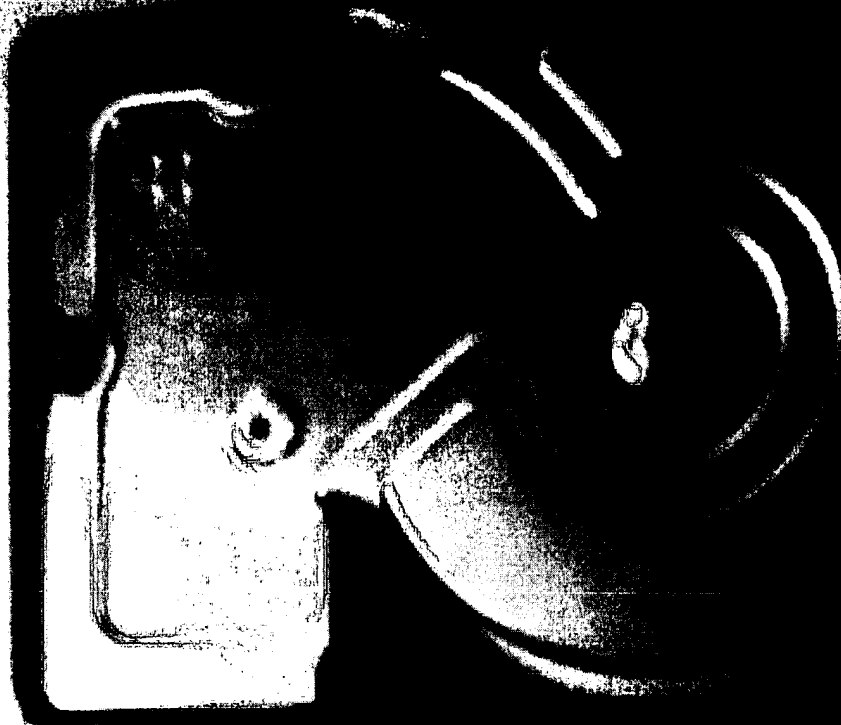


EXHIBIT B



EXHIBIT C

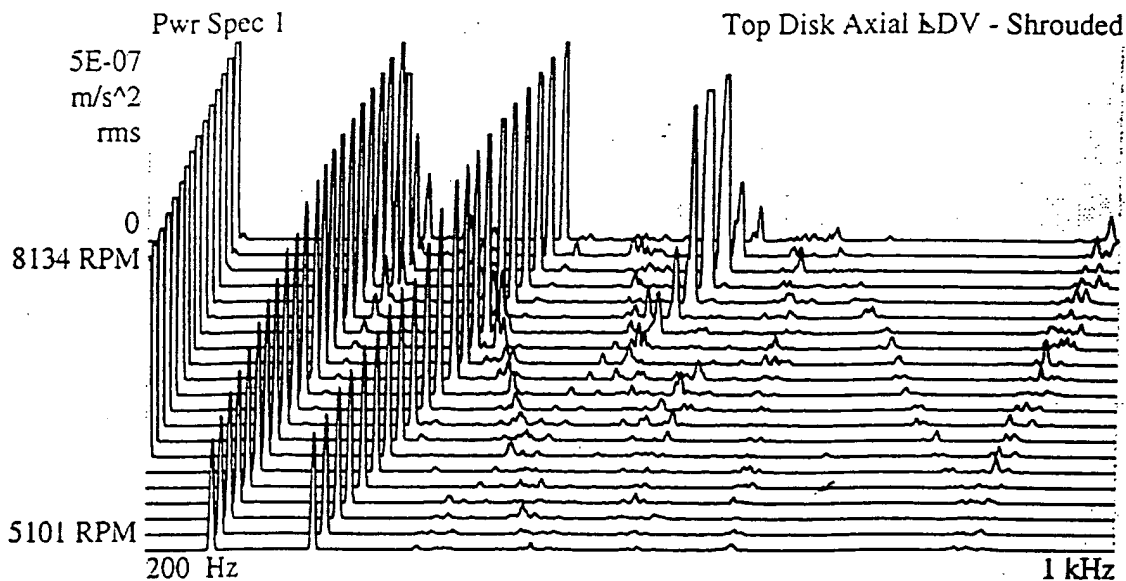
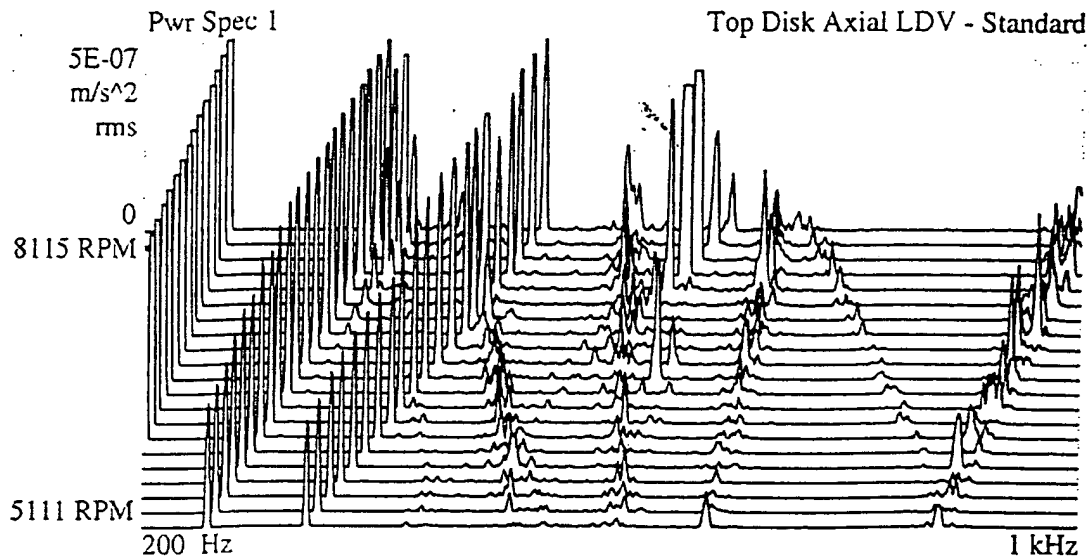
Patent Disclosure to Western Digital Corporation

Title: Insert Molded HDA Top Cover Providing Radial & Axial Disk Shrouding

Authors: Walter Butler

Concept:

The waterfall plots are non-shrouded and shrouded axial disk modes.



WESTERN DIGITAL PROPRIETARY

THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION THAT IS NOT TO BE DISCLOSED OR
USED WITHOUT WESTERN DIGITAL'S PERMISSION.